What's changed and what hasn't

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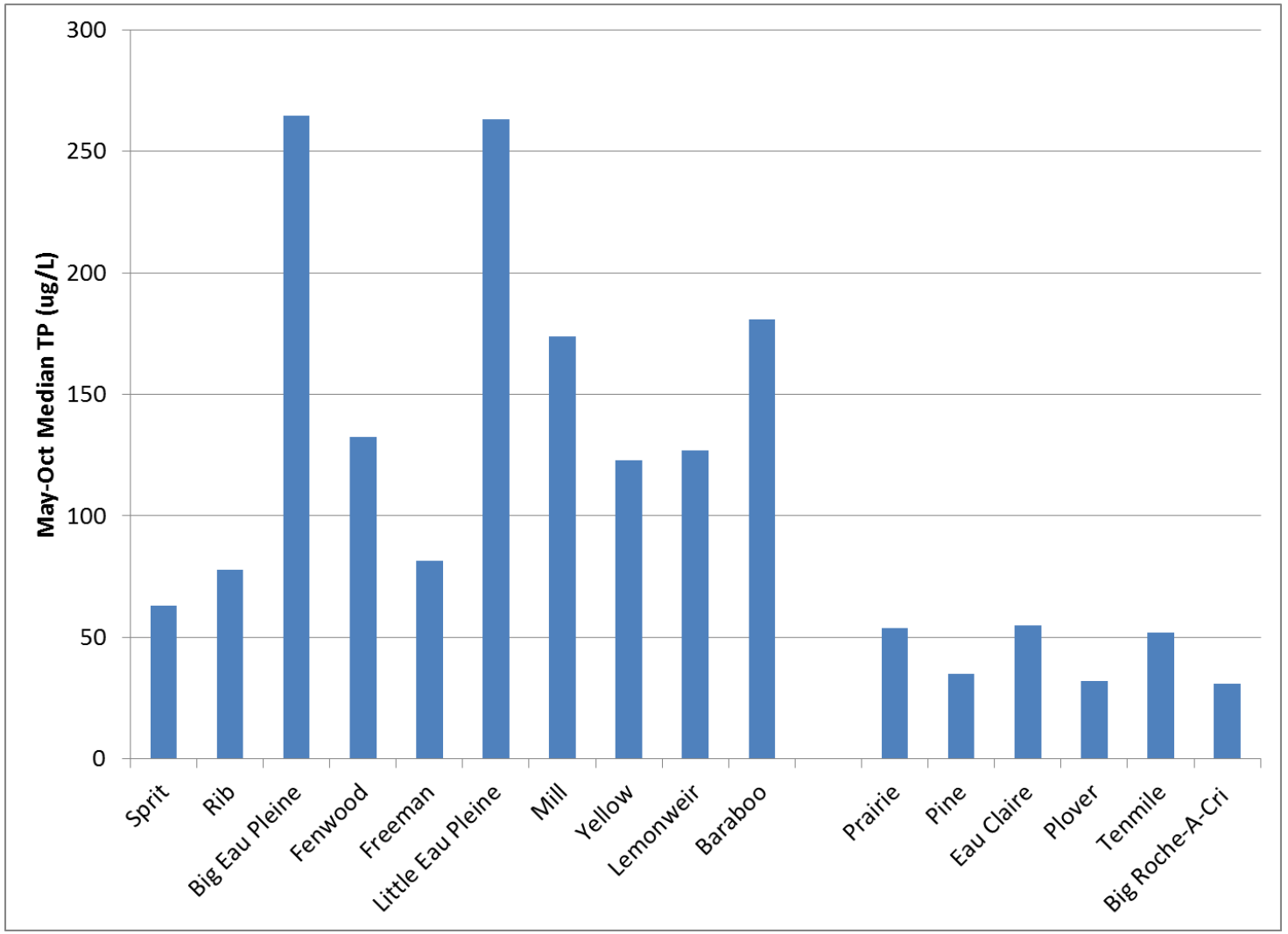
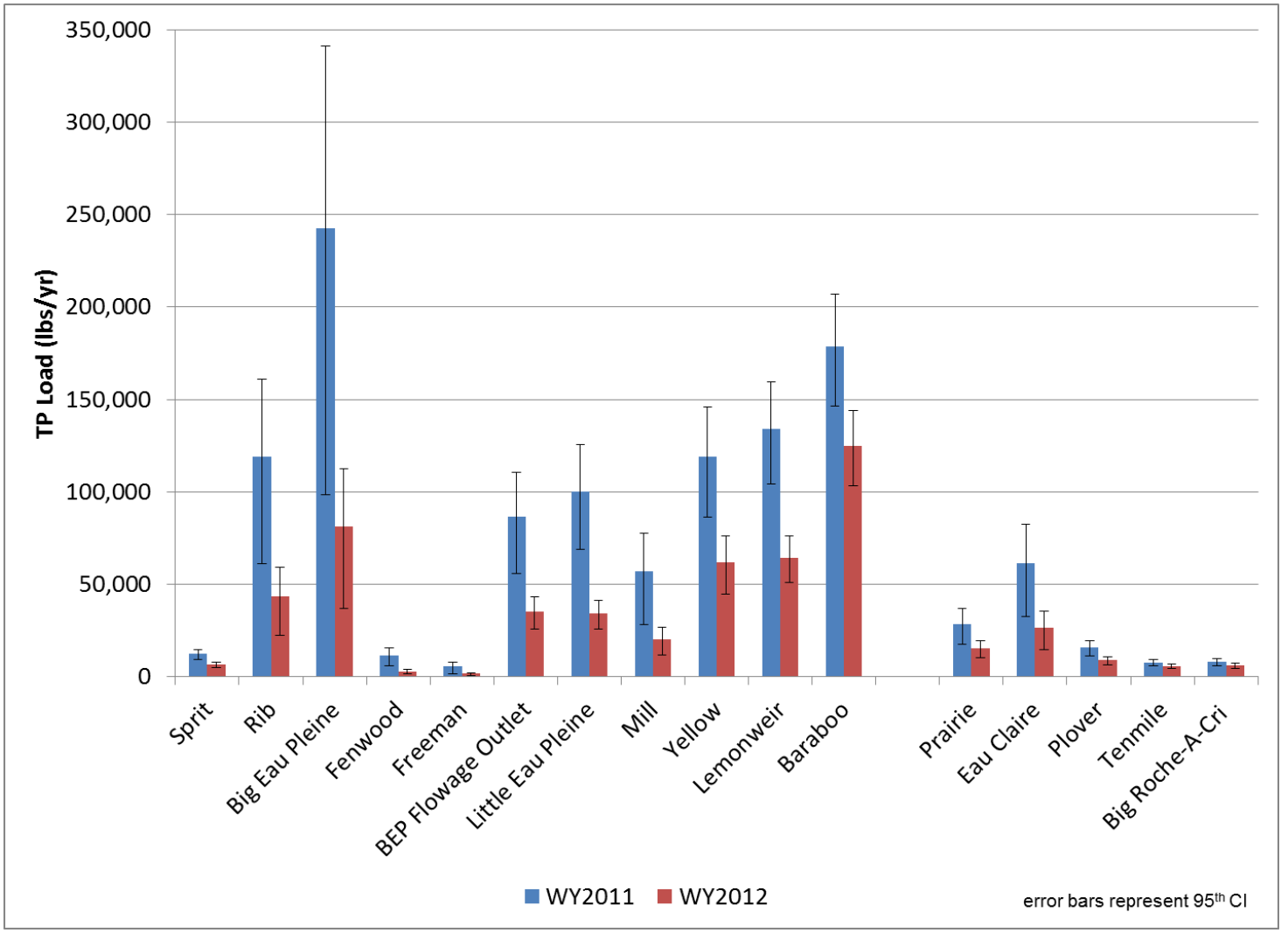
Phosphorus Criteria Refresher

- Contained in s. NR 102.06 WI Admin. Code
- Rivers and Streams
  - Named rivers – 100 μg/L
    - Wisconsin River downstream of Rhinelander
    - Lemonweir River downstream of New Lisbon
    - Baraboo River downstream of La Valle
  - Other rivers in this study - 75 μg/L
- Lakes and Reservoirs
  - Natural lakes – 15 to 40 μg/L (none in this study)
  - Reservoirs
    - Stratified Reservoirs - 30 μg/L
      - Big Eau Pleine
    - Mixed Reservoirs - 40 μg/L
      - Lake Dubay, Petenwell, and Castle Rock

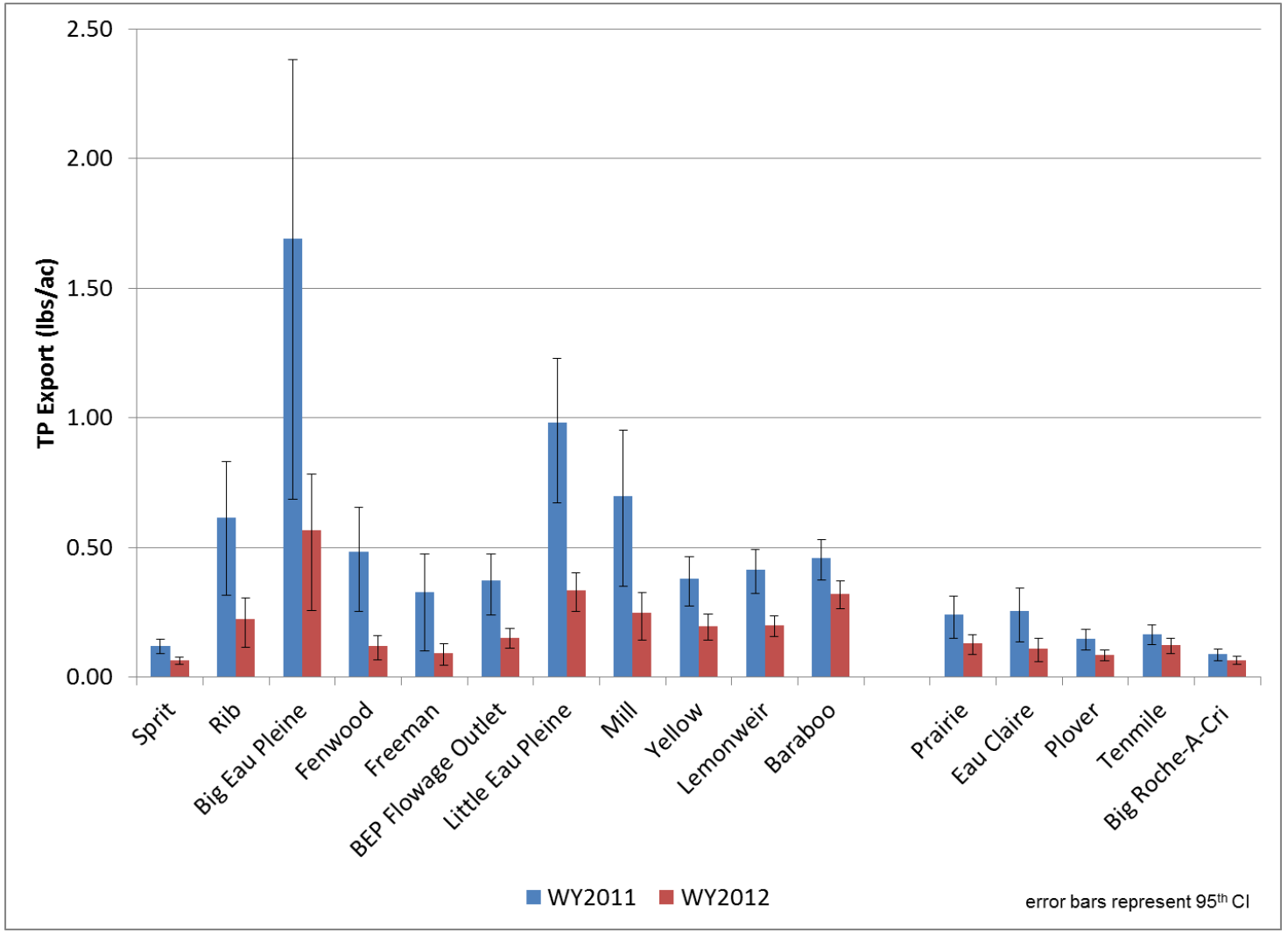
Wisconsin River Tributaries: May-Oct Medians (2009-2012)



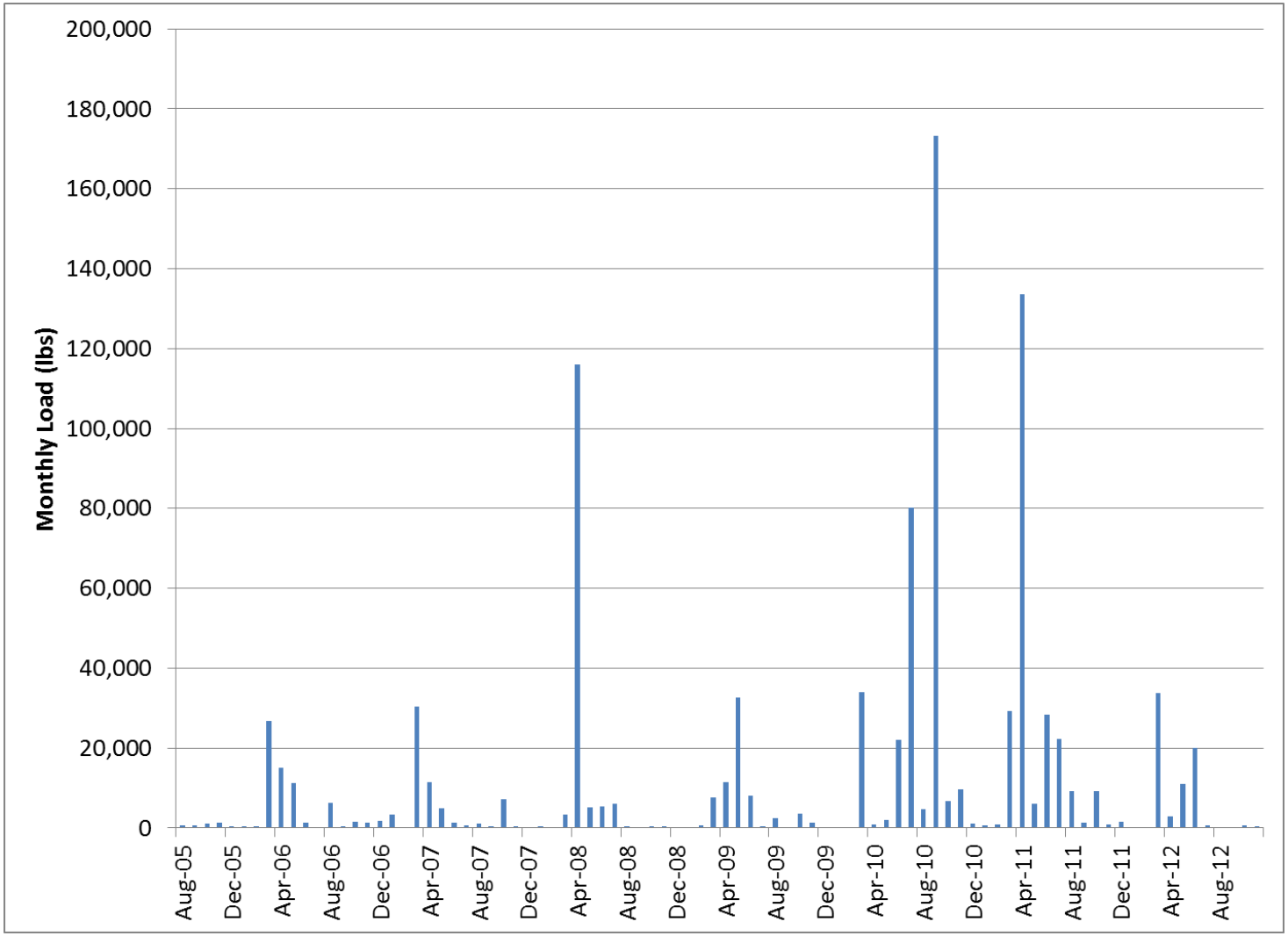
Wisconsin River Tributaries: Preliminary Loads



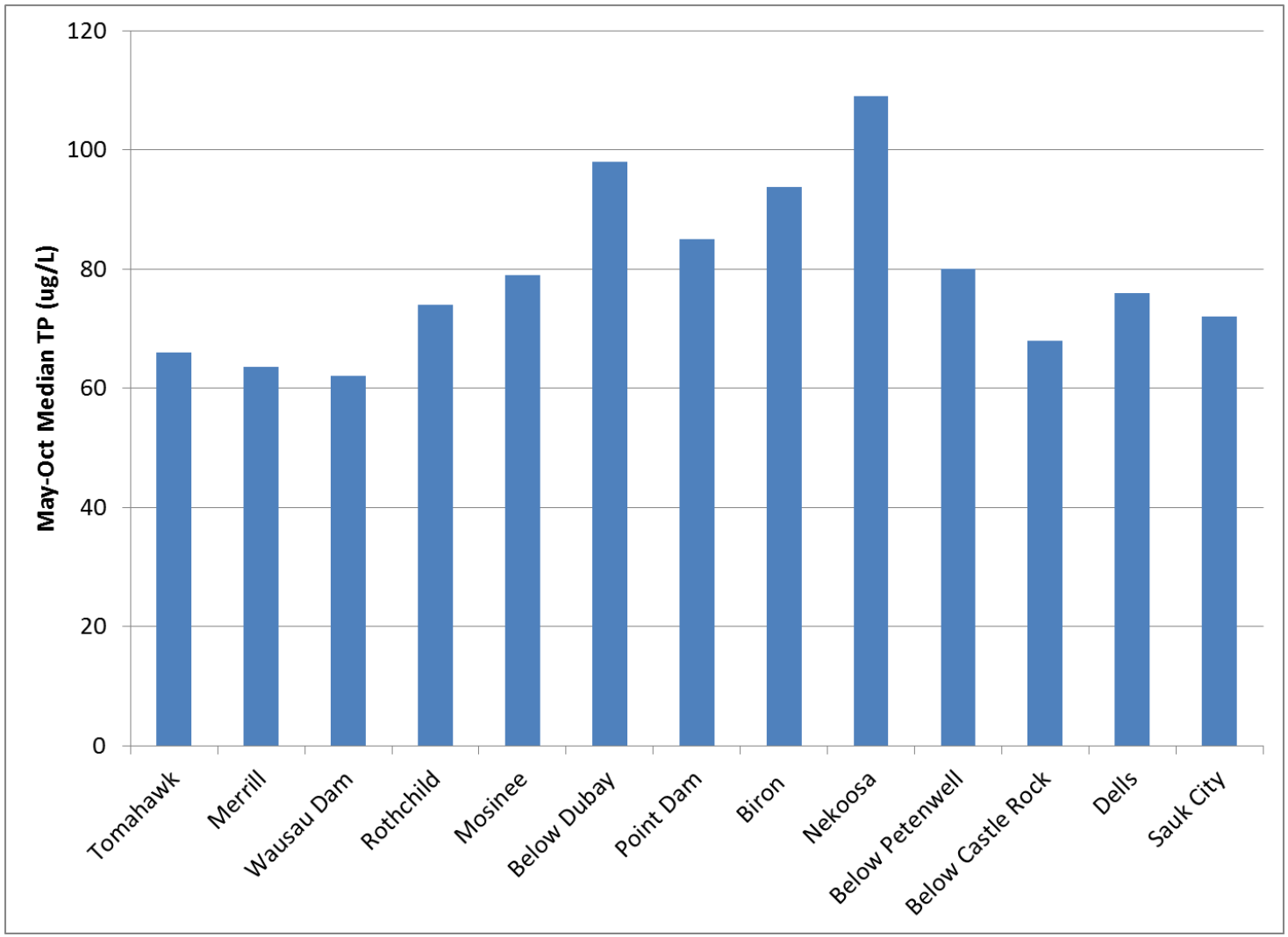
Wisconsin River Tributaries: Preliminary Loads



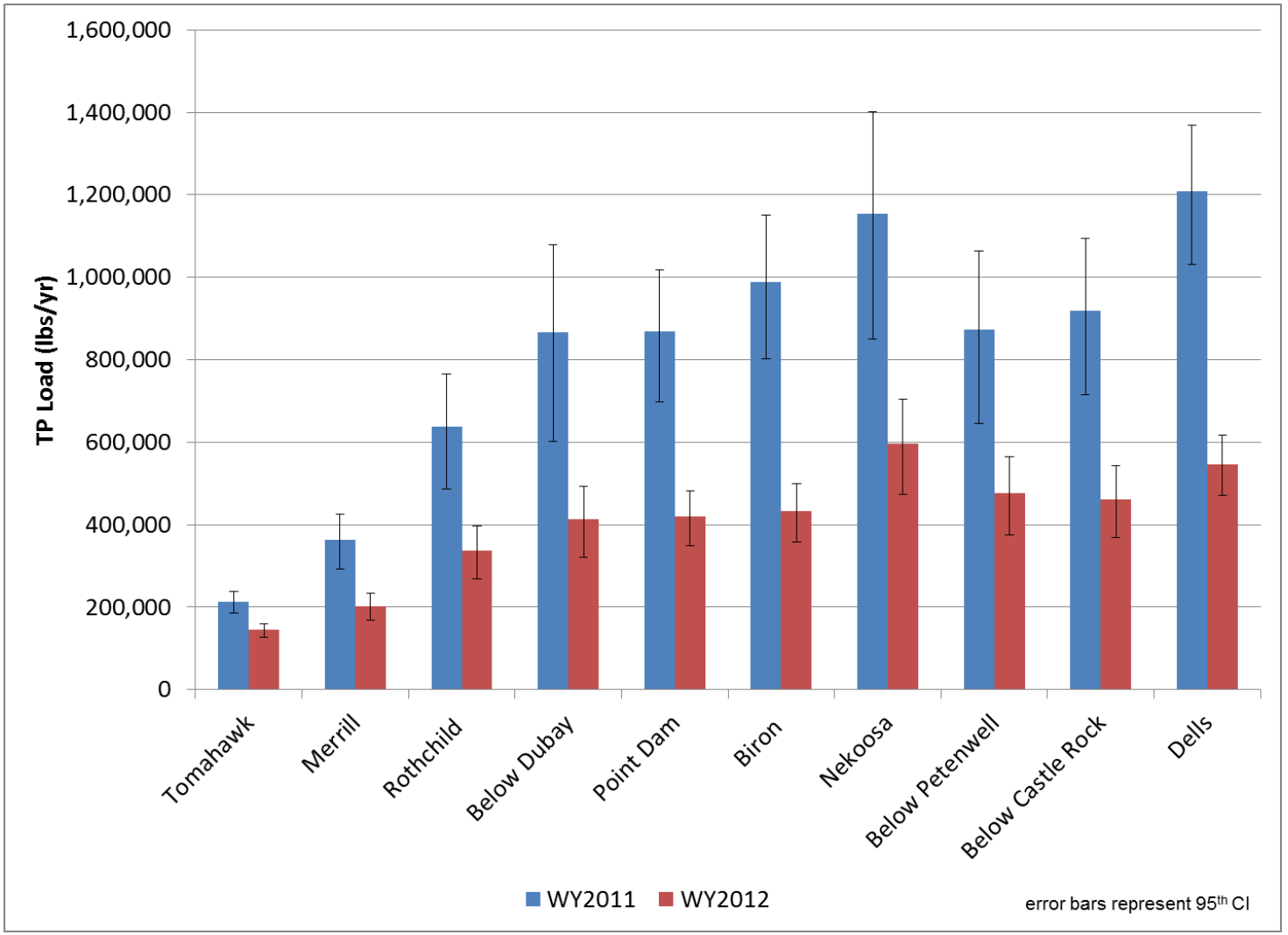
Wisconsin River Tributaries: Preliminary Loads: Big Eau Pleine



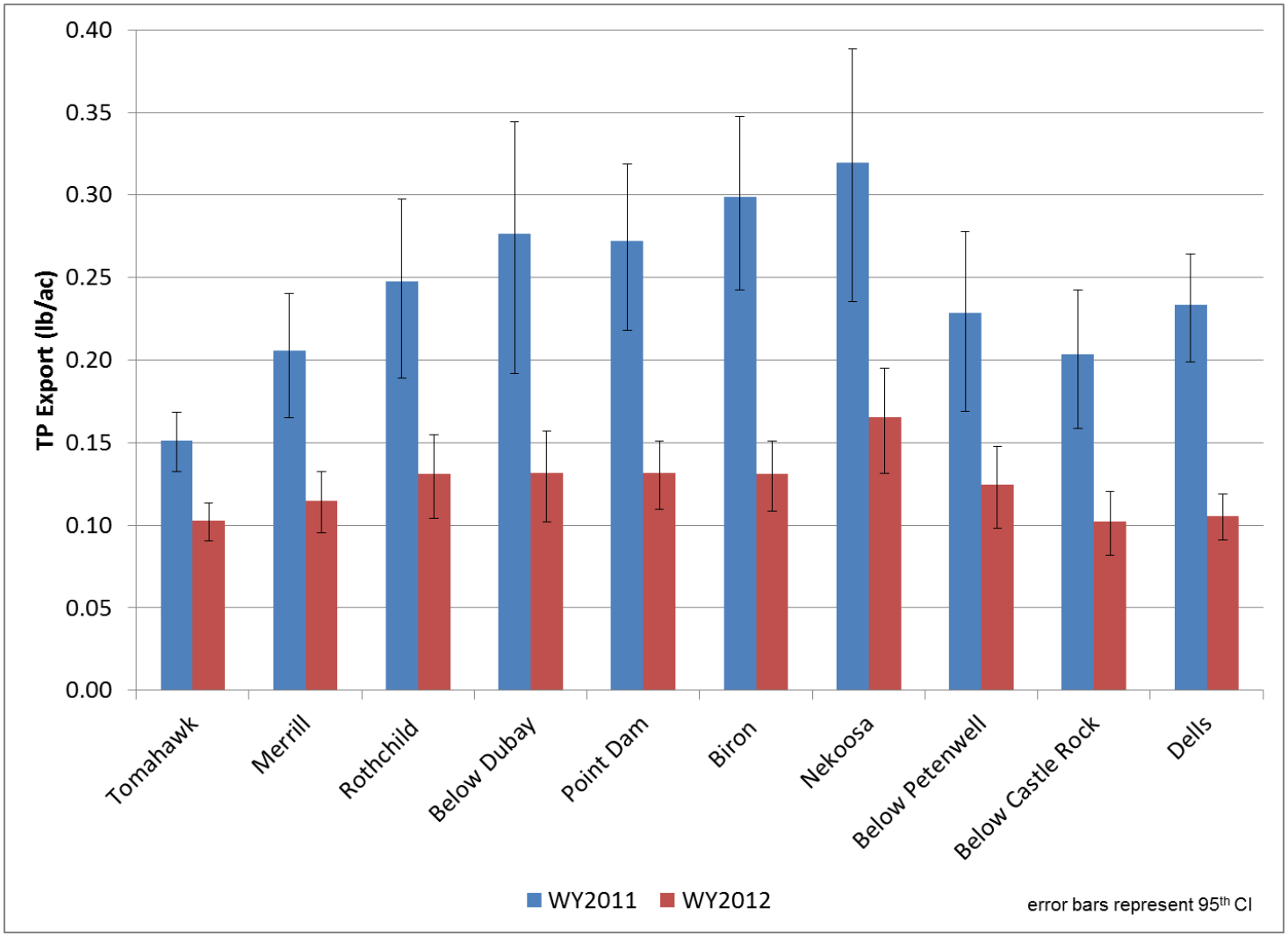
Wisconsin River Mainstem: May-Oct Medians(2009-2012)



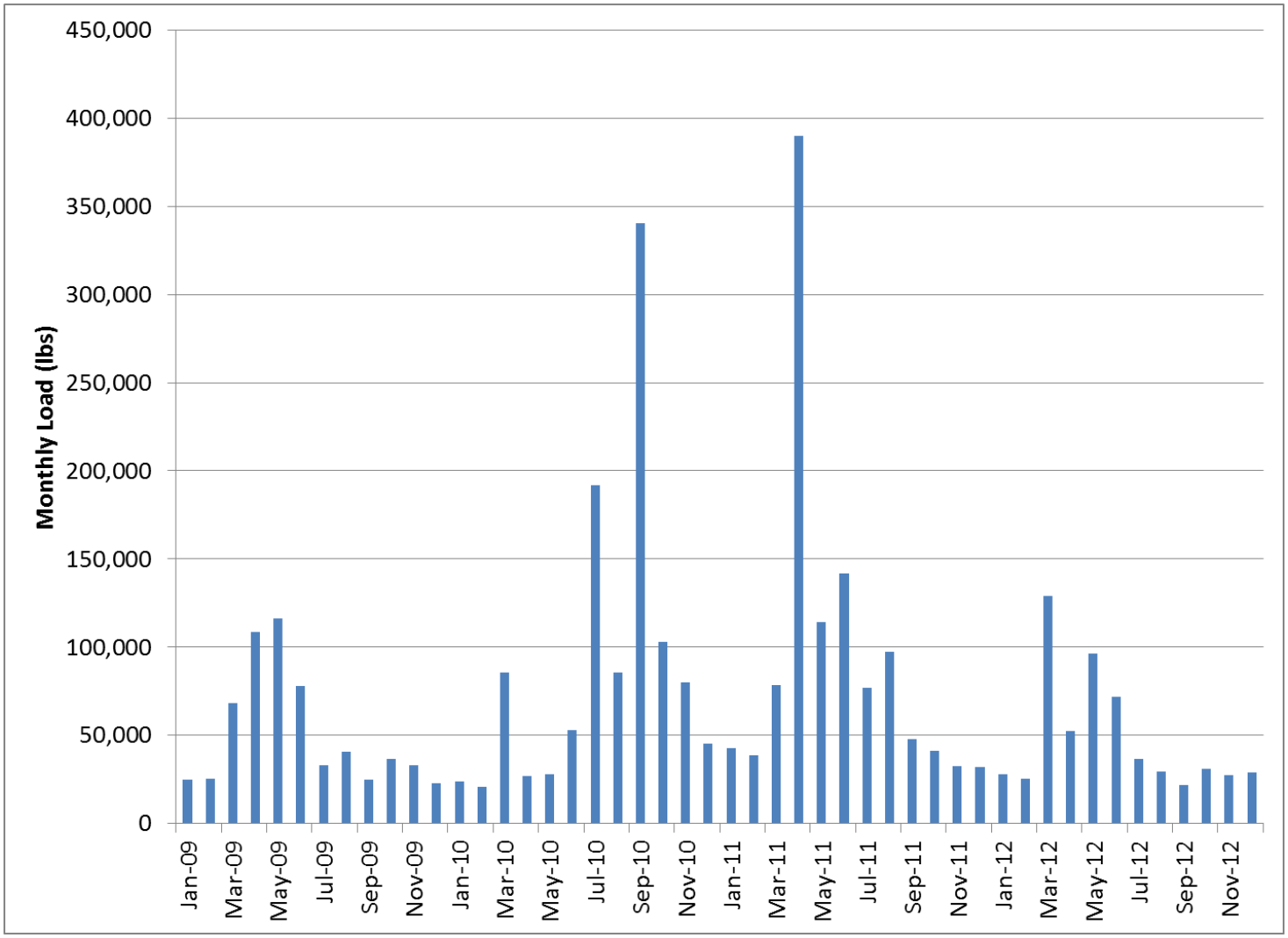
Wisconsin River Mainstem: Preliminary Loads



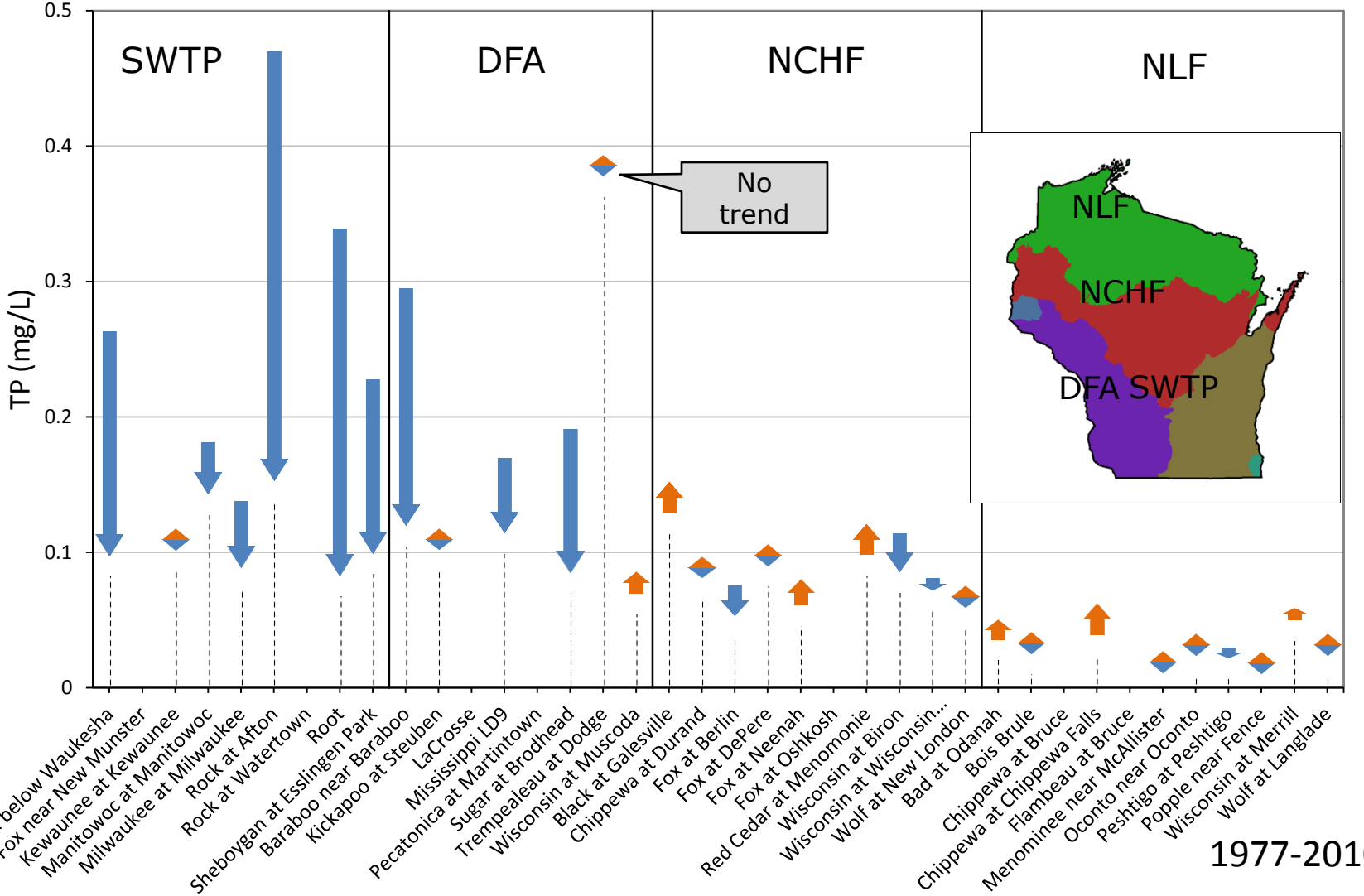
Wisconsin River Mainstem: Preliminary Loads



Wisconsin River Mainstem: Preliminary Loads: Nekoosa

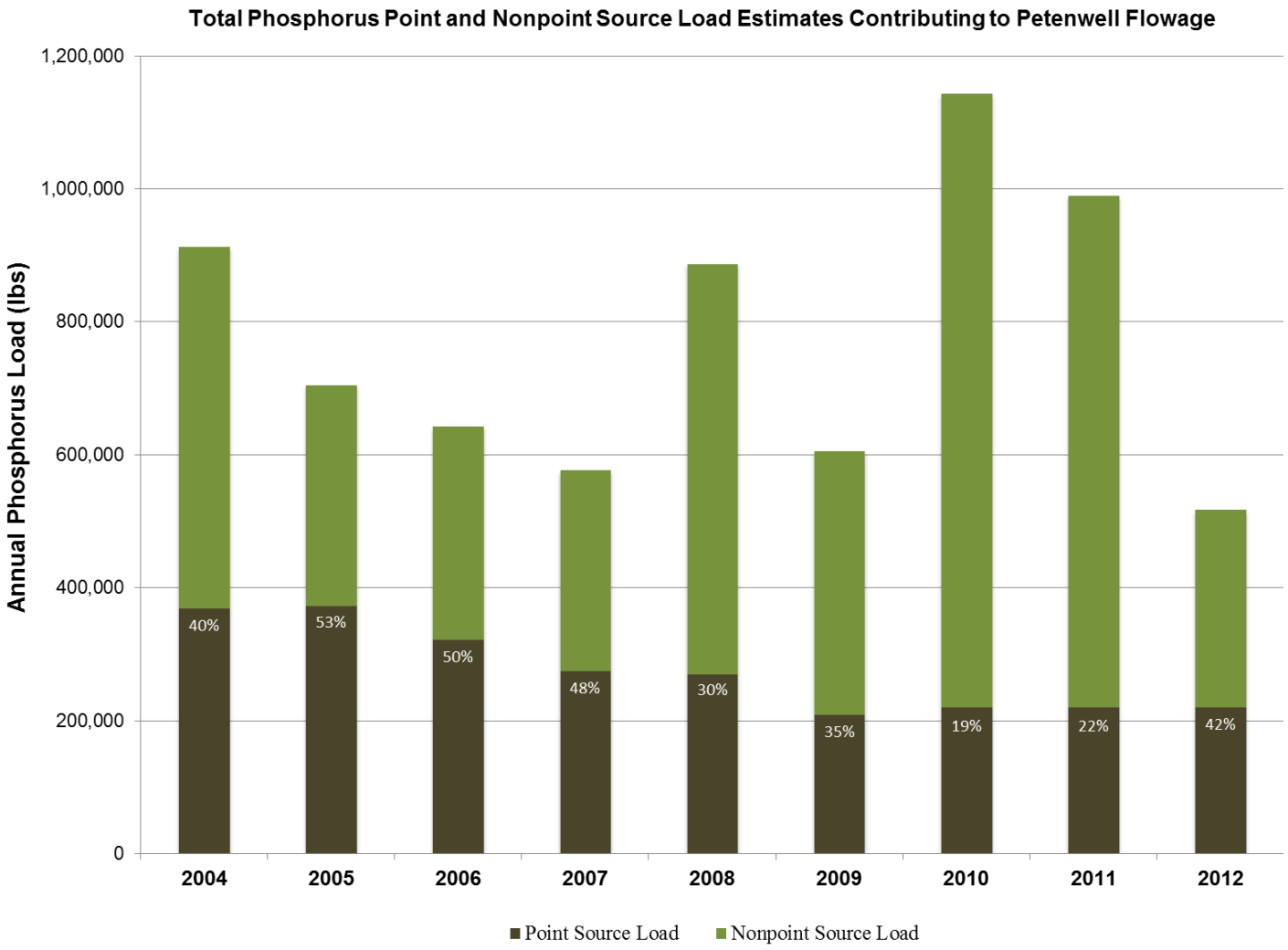


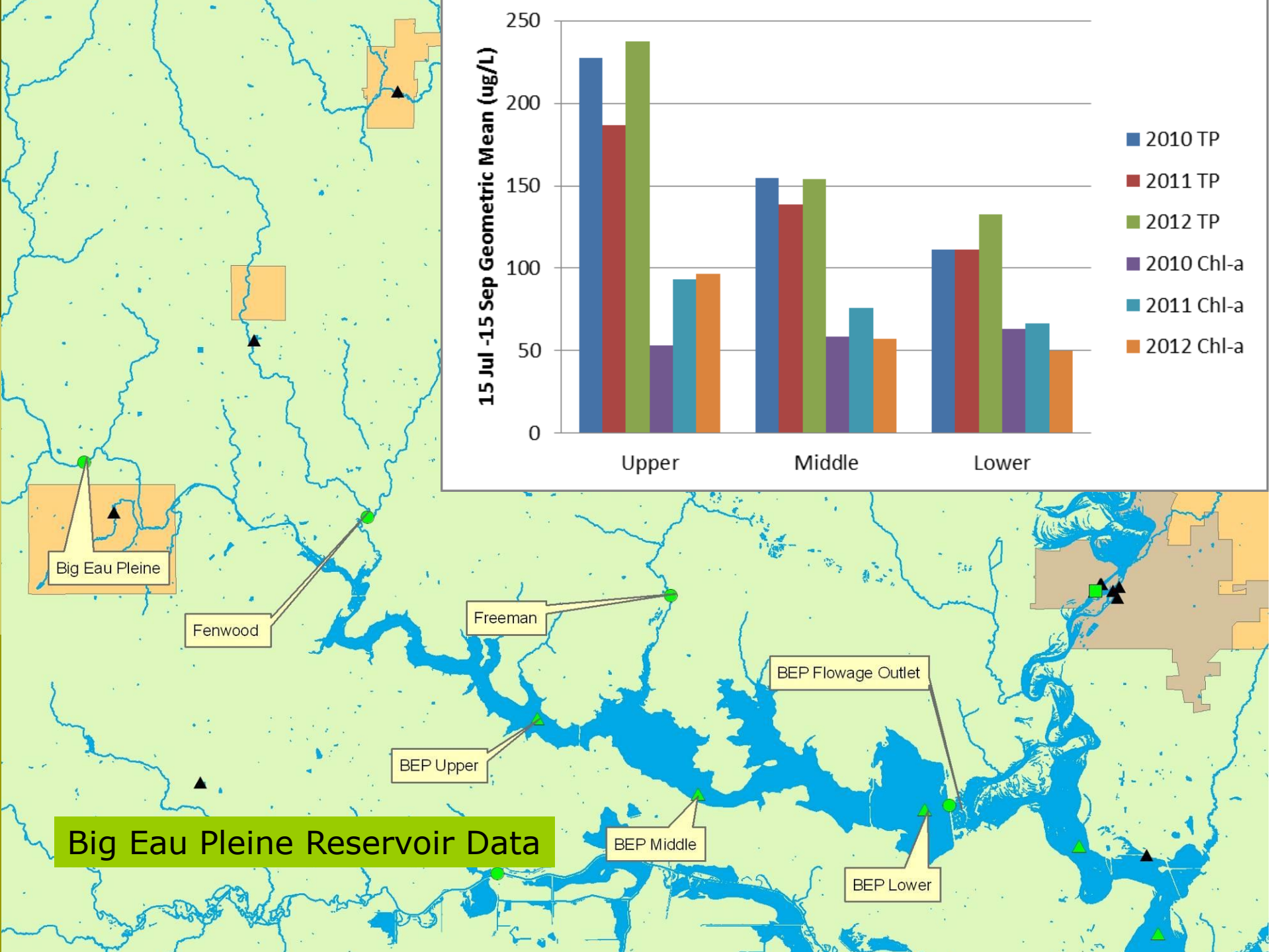
Longer Term Comparisons

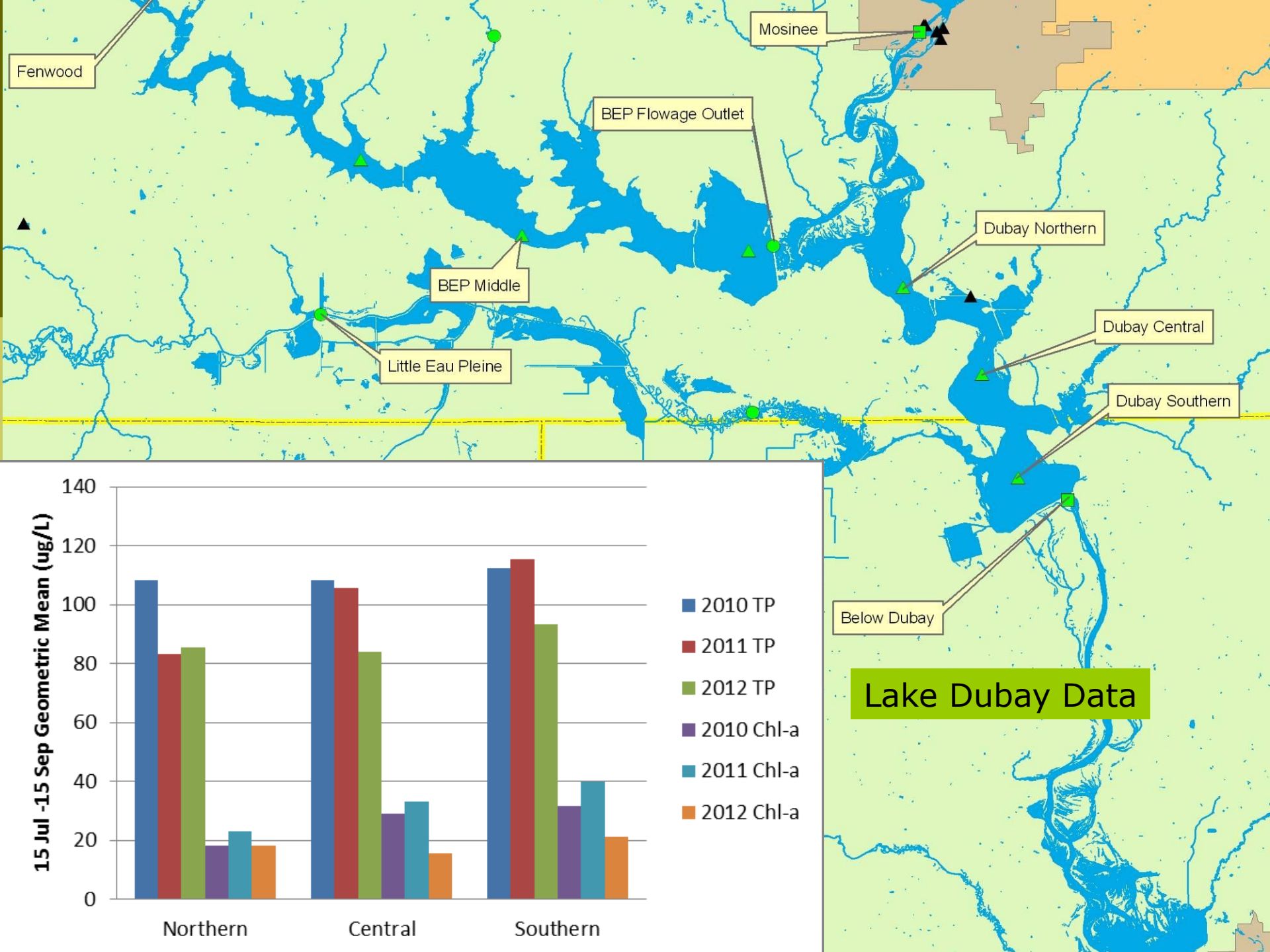


1977-2010

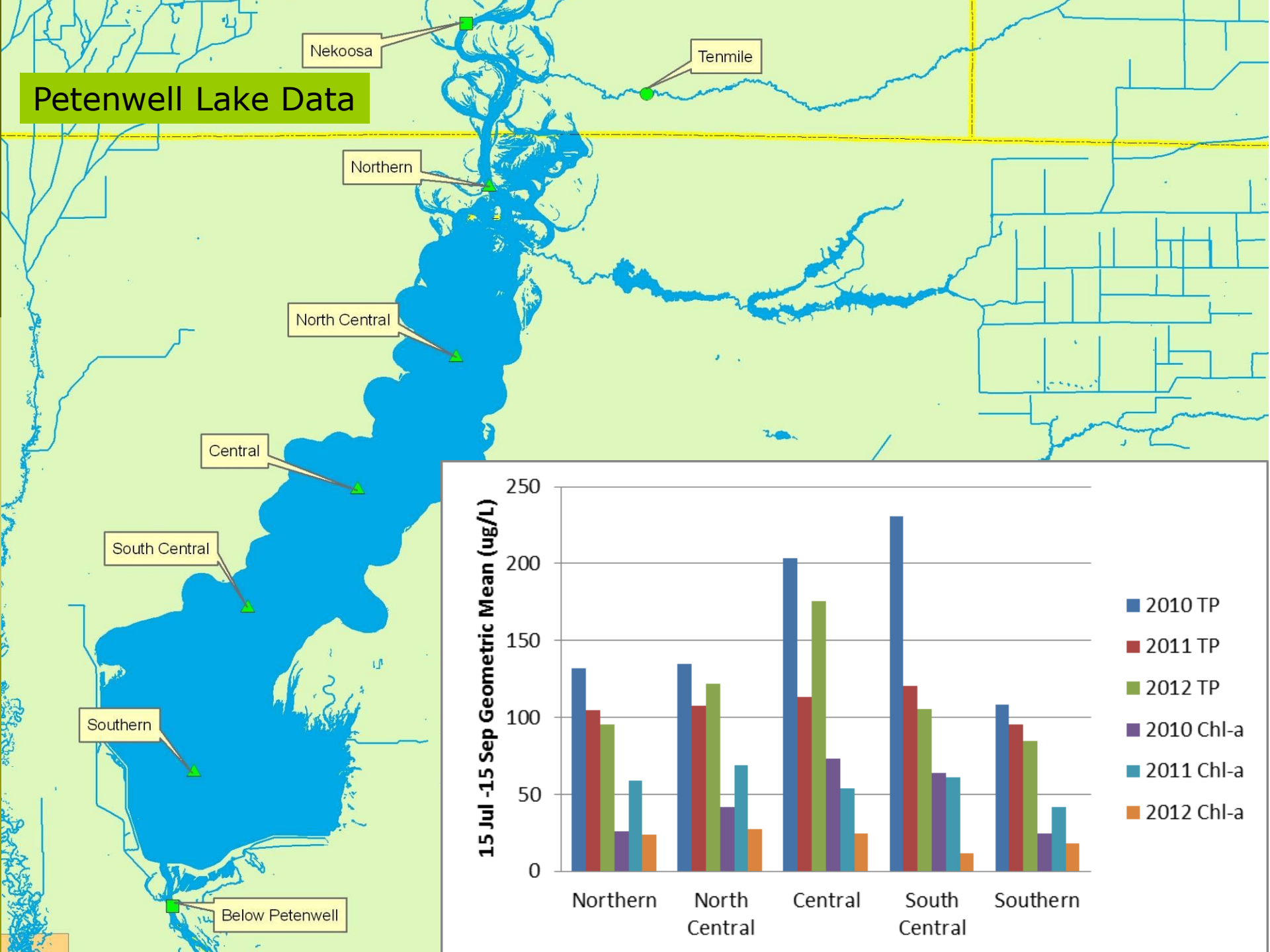
Longer Term Comparisons



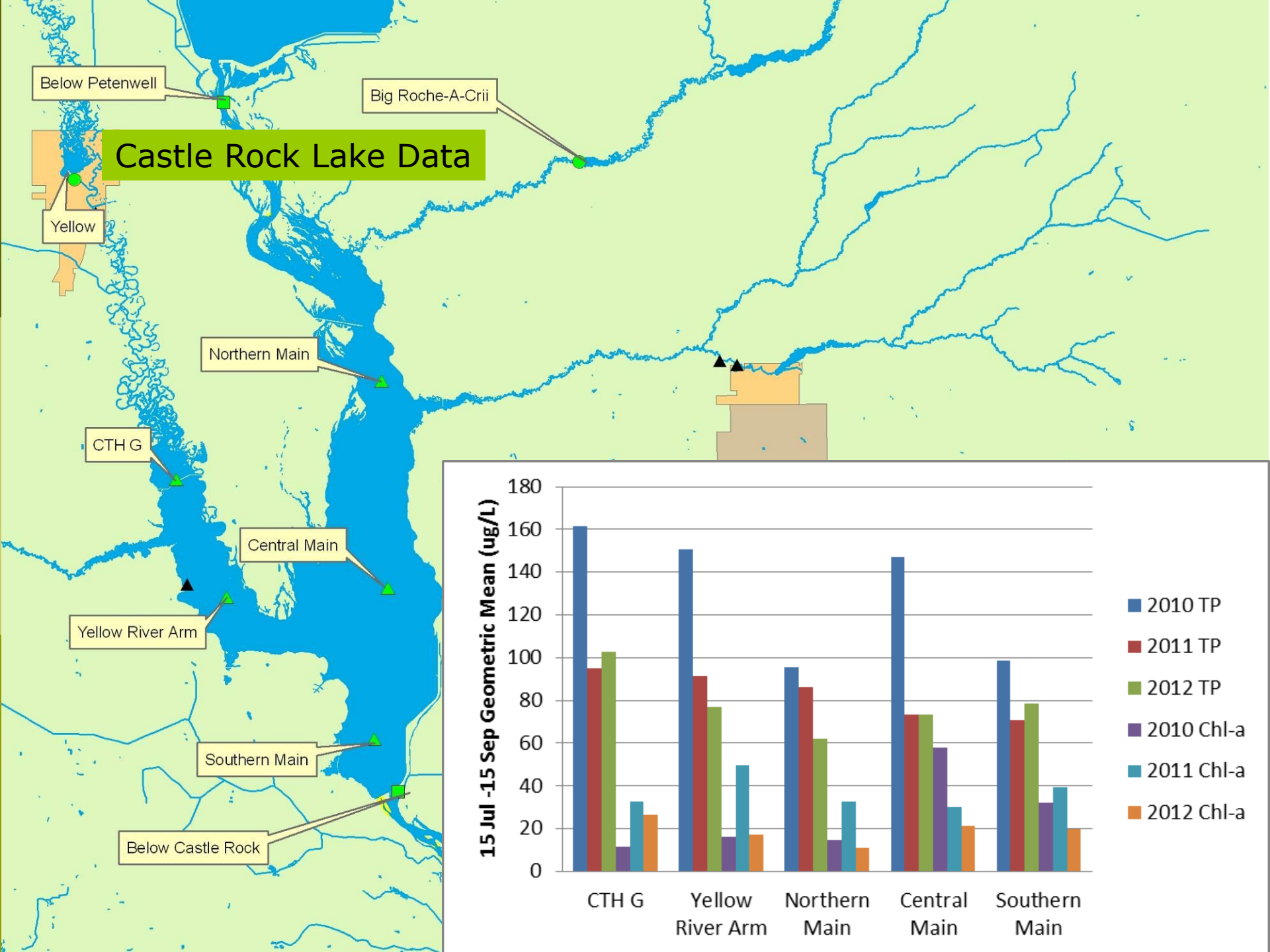

15 Jul -15 Sep Geometric Mean (ug/L)
250
200
150
100
50
0
Upper
Middle
Lower
2010 TP
2011 TP
2012 TP
2010 Chl-a
2011 Chl-a
2012 Chl-a
Big Eau Pleine
Fenwood
Freeman
BEP Flowage Outlet
BEP Upper
BEP Middle
BEP Lower
Big Eau Pleine Reservoir Data

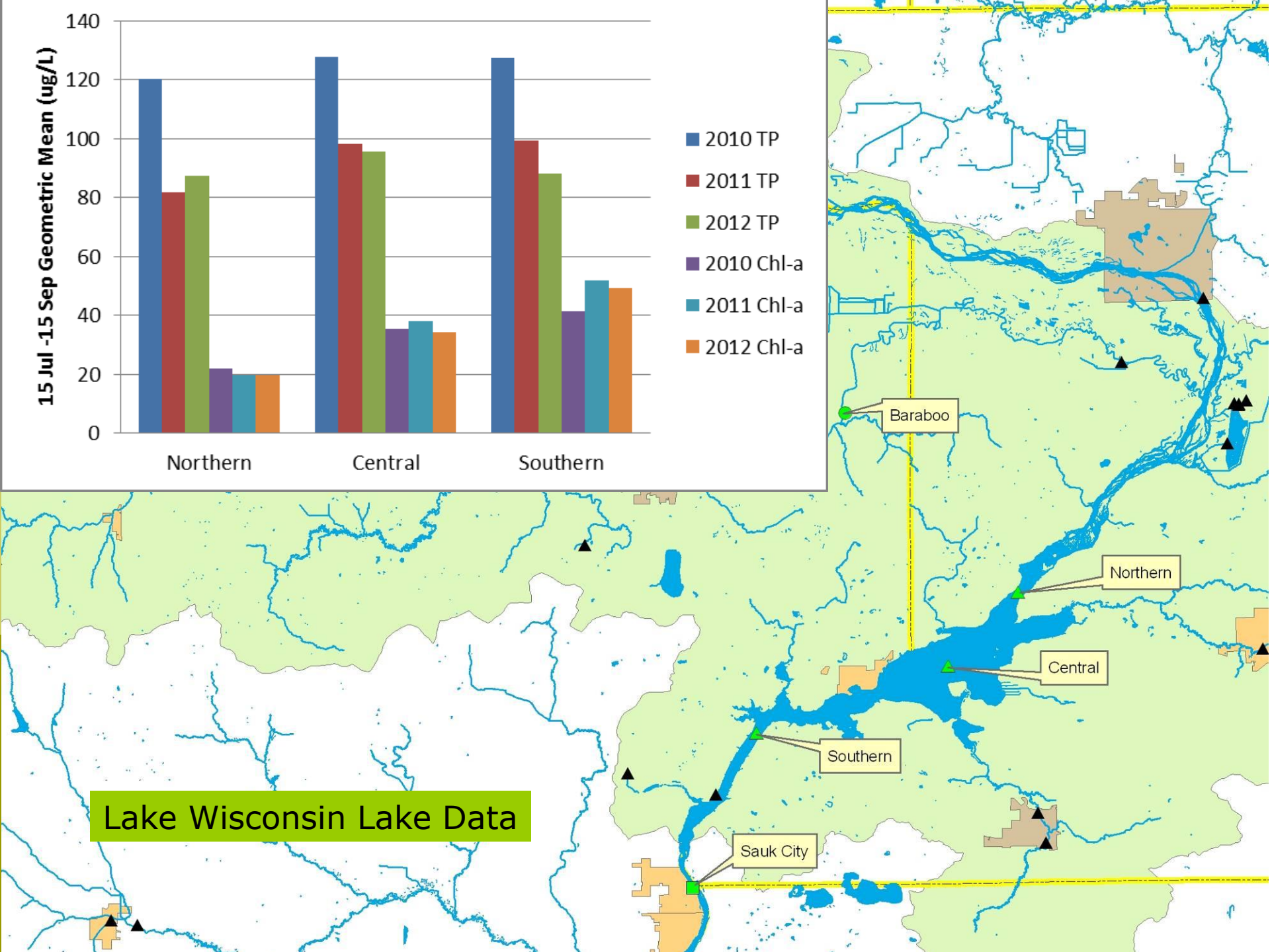

Fenwood
Mosinee
BEP Flowage Outlet
Dubay Northern
BEP Middle
Little Eau Pleine
Dubay Central
Dubay Southern
Below Dubay
Lake Dubay Data
15 Jul -15 Sep Geometric Mean (ug/L)
140
120
100
80
60
40
20
0
Northern
Central
Southern
2010 TP
2011 TP
2012 TP
2010 Chl-a
2011 Chl-a
2012 Chl-a

Petenwell Lake Data



Castle Rock Lake Data





Lake Wisconsin Lake Data

Conclusions

- Wisconsin River phosphorus concentrations generally increase north to south
  - Big Eau Pleine, Petenwell and Castle Rock appear to act as net sinks for phosphorus
  - Lake Dubay and Lake Wisconsin less clear
- Western tributaries exhibit much higher phosphorus concentrations and unit area loads than eastern tributaries
- Flowages generally exhibit poor water quality (Chlorophyll > 25 µg/L)
  - Algae blooms are variable and heterogeneous